DNV·GL

EUROPEAN UNION RECOGNISED ORGANISATION (EU RO) MUTUAL RECOGNITION TYPE APPROVAL CERTIFICATE

Certificate No:
MRA0000025

In accordance with Article 10.1 of EU Regulation 391/2009

This Certificate is issued to

Trafag AG

Bubikon, ZH, Switzerland

for
Pressure Gauges/Transmitters

with type designation(s)
ECL 8439 Submersible pressure transmitter

The product is found to comply with
EU RO Mutual Recognition Technical Requirements for Pressure Gauges – Transmitters

Intended service
Pressure transmitters for use in control, alarm, monitoring and instrumentation systems subject to classification, including ballast and service tank gauging.

Applicable for a ship as defined in Mutual Recognition Provisions Article 10 Regulation on Common Rules and Standards For Ship Inspection and Survey Organizations.

See product description on page 2 for further details.

Temperature [°C]:	**-25°C and 70°C**
Vibration:	**±1.6 mm / 4.0 g**
EMC:	**All locations including bridge and deck zone**
IP Code:	**IP68 / 20 m**

This is to certify:

that the Product referred to herein has been inspected for the Manufacturer, pursuant to the relevant requirements of the European Union Recognised Organisation Mutual Recognition procedure, required by Article 10.1 of EU Regulation 391/2009, and has been found in accordance with those requirements.

This Certificate is valid until **2024-03-13**.

Issued at **Høvik** on **2019-03-14**
DNV GL local station: **Augsburg** for **DNV GL**

Approval Engineer: **Ståle Sneen**

Trond Sjåvåg
Head of Section

When a product is presented with this EU RO MR Type Approval Certificate for given application, its acceptability with regards to the limitations stated in the certificate conditions defined in 1b, 1c and 1d of the applied Technical Requirement will be evaluated by the EU RO in charge of classing the ship or being in charge of the unit/system certification.
This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

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Product description

ECL 8439 series submersible pressure transmitter for pressure and level gauging applications.
Fully submersible construction with integrated cable, designed to be mounted internal to tank.

Ordering information / type code: 8439.aa bb cc dd ee ff

aa – Measuring range:	Different ranges in bar, from 0…0.1 to 0…2.0
	Different ranges in psi, from 0…1.5 to 0…30
bb – Sensor:	23 = Relative pressure
cc – Housing:	58 = Housing AISI316L, standard version
	55 = Housing 1.4462, standard version
	56 = Housing AISI316L, OEM-version
	50 = Housing 1.4462, OEM-version
	60 = Housing AISI316L, Serto Connection
dd – Electrical connection:	2x = Outer sheath material PUR
	3x = Outer sheath material Radox
	4x = Outer sheath material PE
ee – Output signal:	19 = 4…20 mA
ff – Accessories:	61 = Seal FKM/FPM/Vitron
	63 = Seal EPDM/TPE

Technical specifications

Power supply	24 VDC, type tested 9…32 VDC
Signal output	4-20 mA / 2 wire loop powered

Accuracy (typical)	Class 0.5%	Class 0.3%
Total Error Band @ -25°C…+70°C	±2.0% FS	±1.0% FS
Accuracy @ +25°C	±0.5% FS	±0.3% FS
Non-linearity and hysteresis @ +25°C (best straight line)	±0.3% FS	±0.2% FS
Temperature coefficient zero point and span	±0.02% FS/K	±0.02% FS/K
Long term stability 1 year @ +25°C	±0.2% FS	±0.2% FS

Manufactured by

Trafag AG,
Industriestrasse 11,
CH-8608 Bubikon,
Switzerland

Application/Limitation

Applicable for a ship as defined in Mutual Recognition Provisions Article 10 Regulation on Common Rules and standards For Ship Inspection and Survey Organizations.

Type Approval documentation

Marking of product

The products to be marked with:
- manufacturer name
- model name
- serial number
- power supply ratings

Other conditions

The pressure transmitters have been verified for compliance with EU Mutual Recognition Technical Requirements for Pressure gauges – transmitters version 0.0, dated 2016-07-01.

Environmental test parameters	DNV GL location classes
Temperature: -25°C ~ +70°C	D

Vibration:	±1.6 mm / 4.0 g	B
Humidity:	95%RH @ 55°C, damp heat cyclic	B
EMC:	General power distribution zone	A
Enclosure:	IP68 (20 m, 16 hours) (IP-ratings according to IEC 60529)	D

The technical requirements do not specify any special design requirements for the cable. The vented gauge transmitters are delivered with integrated special cable (PUR, Radox or PE, depending on application) that has been reviewed and found to comply with DNV GL rules for classification of ships Pt.4 Ch.8 Sec.9.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications
- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment will be performed annually and at renewal of the certificate.

END OF CERTIFICATE